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U. S. GOVERNMENT BONDS AS CAPITAL MARKET INSTRUMENTS

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INTRODUCTION

In March 1971, Congress granted the Treasury the authority to issue up to \$10 billion in bonds without regard to the statutory interest rate ceiling of 4 1/4 percent. The Treasury first exercised this new authority in its August refunding when it sold \$795 million of new 10-year bonds. This sale ended a 6-year absence by the Treasury from the capital market and helped to reverse the steady decline in the outstanding volume of long-term Government bonds occasioned by this absence.

At the present time, the Federal Government has outstanding approximately \$24 billion in marketable bonds that are more than five years from maturity and can, therefore, be classified as capital market instruments.¹ These bonds are the most actively traded and widely held capital market instruments and are the assets against which the risk, liquidity, and yield characteristics of other long-term instruments are compared. Despite a substantial decline in the volume of long-term Government bonds in recent years, they continue to be an important debt instrument.

This article surveys the historical variations in the Federal Government's capital market debt, describes the primary and secondary markets for that debt, and examines recent trends in its ownership and in the overall performance of the market for Government bonds.

HISTORICAL BACKGROUND

Securities similar to currently outstanding Government bonds were sold to the general public

¹In the absence of adequate information on the markets in which the various maturities of Government bonds are traded, any method of deciding which maturities are capital market instruments and which are not will be somewhat arbitrary. Bonds 10 years from maturity can be safely classified as capital market instruments, since nearly all investors would regard them as long-term assets. At some point within the 1- to 10-year maturity range, investors begin to view Government bonds as short-term assets rather than capital market instruments. A demarcation, at the 5-year maturity, while an oversimplification, does not appear unreasonable and has the advantage of corresponding to the maturity classification used in much of the published data on the Government debt. Whenever the data permit, the discussion recognizes the intermediate character of bonds in the 5- to 10-year maturity range by distinguishing between these bonds and those maturing beyond 10 years. Also, 5- to 7-year Treasury notes are not included in this discussion of capital market instruments because they are primarily considered intermediate-term assets.

for the first time in 1862 as part of the Government's program for financing the Civil War. Prior to 1862, the Treasury financed its occasional deficits—incurred principally during the War of 1812, the Mexican War, and the depressions of the 1830's and 1850's—through negotiated placement of securities with major banks and private banking houses. These banks then redistributed the securities to other banks and investors throughout the country.

These procedures proved inadequate during the early years of the Civil War; and in 1862, after an extensive publicity campaign, the Treasury successfully sold \$500 million of 5- to 20-year bonds to an estimated three million private investors. In 1864, the Treasury was able to sell an additional \$800 million of 3-year notes. In total, the new marketing procedures enabled the Federal Government to finance a debt that grew from roughly \$50 million before the war to \$2.8 billion by August 1865.²

The Treasury's next major financing effort—the first modern-day sale of long-term bonds—occurred during World War I, when the gross public debt increased from \$1.2 billion at the end of fiscal 1916 to \$25.5 billion by the end of fiscal 1919. Through four Liberty Loan operations, \$17 billion of marketable bonds were sold; and by June 1919, 68 percent of the marketable public debt had a maturity greater than five years.

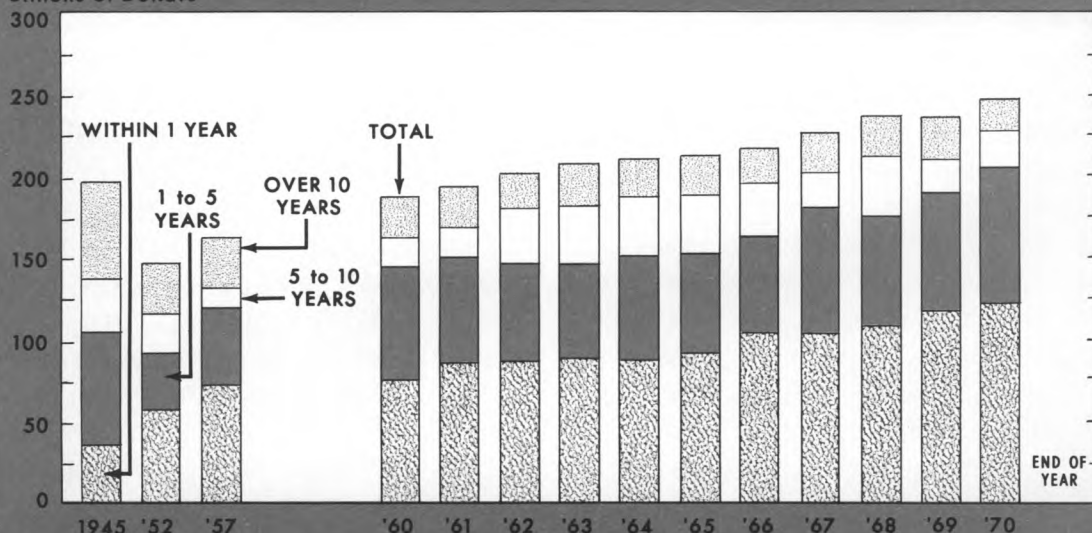
After retiring \$9 billion of outstanding bonds during the ten years following the war, the Treasury was again faced with the task of financing substantial Federal deficits incurred during the Great Depression. From June 1930 to

²Tilford C. Gaines, *Techniques of Treasury Debt Management*, (New York: The Free Press of Glencoe, 1962), p. 9.

Chart 1.

Maturity Distribution of INTEREST-BEARING MARKETABLE PUBLIC DEBT Selected Years

Billions of Dollars



Last entry: 1970

Source: Treasury Bulletin

June 1941, the Treasury's marketable debt increased \$22.6 billion, of which \$18.3 billion represented new bonds. It is interesting to note that the Government's deficits during the depression years were financed almost entirely by the sale of securities with 10- to 20-year maturities. At the time, it was accepted debt management policy to issue securities that could be retired at maturity. Thus, during the 1930's, it was felt that short-term securities should not be sold because funds probably would not be available to retire them at maturity.³

The greatest volume of Treasury bond sales occurred during World War II when the gross Federal debt skyrocketed from \$49 billion in June

1941 to \$280 billion in February 1946. During these years, bonds totaling \$88 billion were sold with maturities ranging up to 30 years. By the end of 1945, approximately \$93 billion of bonds, or about 47 percent of the marketable debt, had a maturity of more than five years (see Chart 1). Three of these World War II bond issues—totaling \$5.7 billion—remain outstanding today; all are close to maturity, with the last one scheduled to mature in December 1972.

The Treasury did not issue bonds in the years immediately after the war for fear that the sale of new long-term issues would cause the prices of bonds sold during the war to fall below par. A central feature of the Federal Government's economic policies during this period was to keep interest rates at the low World War II levels.

³*Ibid.*, p. 37.

Although the policy of supporting bond prices was formally ended with the Treasury-Federal Reserve Accord in 1951, the Treasury did not resume bond sales until 1953. Sales were suspended again during the 1955-1957 economic recovery, when strong private demand for long-term credit prompted the Treasury to limit its offerings to the shorter maturities. As a result of the Treasury's reluctance to issue bonds during the early postwar period, the volume of outstanding bonds maturing in more than five years fell to \$43 billion, or 26 percent of the marketable debt, in December 1957. From 1958 through mid-1965, however, the Treasury marketed a large volume of bonds and succeeded in rebuilding the volume of long-term debt to \$65 billion or 31 percent of the marketable debt.

Since 1917, a ceiling has been imposed by Congress on the coupon rate the Treasury may offer on its bonds. Because of higher yields on other capital market instruments, the current ceiling of 4 1/4 percent on Government bonds prevented their sale from mid-1965 to 1971, when the Treasury received permission to disregard the ceiling.⁴ Consequently in the last five years, the volume of government bonds that are considered capital market instruments has steadily declined. At the end of 1970, the marketable debt equalled \$247.7 billion, of which \$58.6 billion or 24 percent were bonds. Of these bonds, only eleven issues, or \$23.7 billion, are more than five years from maturity. With the addition of the \$795 million issue sold this year, \$24.5 billion, or only 10 percent of the current marketable debt, can be considered capital market instruments.

⁴It has been suggested that the Treasury might have circumvented the 4 1/4 percent ceiling by selling bonds at a discount. It choose not to primarily because such sales might have been regarded as contrary to the spirit, if not the letter, of the law.

MARKETING TECHNIQUES

The marketing of a new Government bond issue is a major undertaking and requires a considerable amount of advance planning, which is designed to elicit a favorable reception from investors. The initial planning begins six weeks to two months before the anticipated offering date. At this time, Treasury officials begin discussions with officials of the Federal Reserve System, economic advisors within the Administration, and the Government finance committees of the American Bankers Association and the Investment Bankers Association regarding the Treasury's cash requirements, market conditions, and the market reception various types of securities might expect. Representatives of investor groups that hold large amounts of bonds, such as life insurance companies and mutual savings banks, might also be consulted. Approximately two and one-half weeks before the issue date, the Treasury receives the final recommendations of the investor groups and of the Federal Reserve officials. Treasury officials then decide on the composition of the offering. This decision is announced on Thursday afternoon and subscriptions for the new issues are accepted starting the following Monday.

Exchange Refunding. The Treasury may use any one of a number of alternative techniques when placing a new bond issue. The traditional method has been to offer new securities in exchange for maturing securities. In such an operation, the holder of a maturing security may exchange it for new issues or may redeem the security for cash. Usually, subscriptions for the new securities are accepted for three days at the Treasury Department and the Federal Reserve Banks and branches. The bonds are generally available in registered or bearer form. Subscribers pay for their new issues by surrendering their

maturing securities, which are then replaced with new bonds of the same face amount. The delivery and payment date—if any additional payment is required—is usually two weeks after the subscription books are opened.

Holders of the maturing securities who do not wish to exchange them for new issues may either redeem them for cash or sell their "rights" (the issues being refunded provide rights to subscribe to the new securities) to investors interested in acquiring the new securities. Trading in rights begins on the Friday following the offering announcement and continues through the Wednesday the books close.

The Treasury usually attempts to minimize the amount of securities turned in for cash (referred to as attrition) by including a shorter-term security such as a note along with the long-term bond in its rights refunding. Holders of the maturing securities who are not interested in acquiring long-term securities are thereby given the opportunity to exchange their holdings for intermediate-term notes rather than redeeming them for cash. The amount of attrition is often regarded as a measure of the success of the refunding operation. A low level of attrition indicates favorable investor response to the terms of the offering and a successful transfer of rights to investors interested in the new securities.

Cash Refunding and Cash Sales. High rates of attrition occur primarily when interest rates are rising because investors may prefer alternative investments or because they expect to be able to buy the offered securities later at lower cost in the secondary market. Uncomfortably high rates of attrition experienced during 1958 led to the introduction of cash refunding in August 1960. This technique eliminates the problem of attrition and permits the Treasury to sell an amount of new

securities different from the volume of maturing issues.

In a cash refunding, the Treasury retires maturing issues with funds obtained through the sale of new securities. Holders of the maturing securities do not receive pre-emptive rights to the new securities. Instead, the Treasury announces the sale of a specific amount of securities and reserves the right to set maximum subscriptions and allotment ratios. These restrictions are necessary to limit the size of the offering because the amount of maturing issues does not set the upper limit on the new debt to be issued as in exchange refunding.

A third marketing technique is the sale of bonds for new cash. This is almost identical to cash refunding, the only difference being that no maturing securities are refunded with the proceeds of the sale. In both cash offerings and cash refundings, subscribers must submit a deposit—usually 10 percent of the subscription—with their subscriptions unless explicitly exempted in the Treasury's announcement.

Advance Refunding. Perhaps the most important innovation in debt marketing procedures in recent years was the introduction of advance refunding in 1960. Throughout most of 1958 and 1959, the Treasury had been searching for a procedure that could be used to extend the maturity of the debt during times of relatively strong private demand for long-term credit. The Treasury had always been able to sell bonds whenever the private demand for long-term funds was weak; but during periods of strong private demand and rising interest rates, long-term Treasury securities were difficult to issue.

This difficulty originated with the tendency of many investors to concentrate their holdings in one maturity segment of the Government debt.

Normally, as the passage of time converts long-term bonds into intermediate- and short-term maturities, the original owners of the securities sell them to investors interested in holding shorter-term rather than long-term securities. If the Treasury then offers to exchange the issues for long-term bonds in an ordinary refunding operation, long-term investors must reacquire the short-term securities to obtain rights to the new bonds. An orderly reallocation of such rights can be expected when interest rates are falling because rights will usually trade at a premium. When market rates have been rising, however, the coupon rate affixed to the new bonds might not appear as attractive, and the rights may not assume a premium. Owners of rights may then decide to exchange them for cash, since as short-term investors they are not interested in acquiring the new long-term securities.

The advance refunding technique is designed to eliminate this difficulty by refunding long-term securities while they are still some time from maturity and, therefore, still owned by long-term investors. With this technique, the Treasury can capitalize on the investors' preference for long-term issues by offering to exchange their holdings of issues that are within a few years of maturity for new long-term issues.

Advance refundings are of three types, depending upon the maturity of the outstanding issues eligible for exchange. In a "senior advance refunding," holders of bonds in the 5- to 10-year maturity range are offered new bonds with maturities of roughly 20 to 40 years. For example, in the senior refunding of October 1960, four issues of bonds maturing from 1967 through 1969 were eligible for exchange into four new issues ranging in maturity from 20 to 38 years. A "junior advance refunding" involves the refunding of

issues maturing in 1 to 5 years with new issues in the 5- to 10-year range. In a junior refunding in March 1961, holders of four issues maturing in 1962 and 1963 were offered bonds maturing in 5 years, 8 months and in 6 years, 8 months. In a "prefunding," holders of issues maturing within one year are offered intermediate-term bonds or notes. This technique was used for the first time in the September 1962 refunding in which 5- and 8-month securities were eligible for exchange into either a 4-year, 11-month note or a 9-year, 11-month bond.

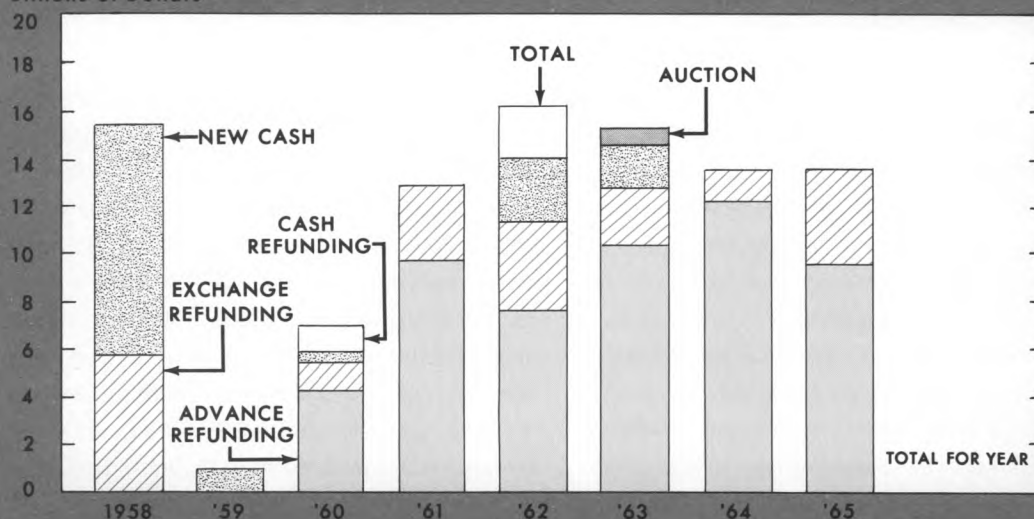
As the Treasury gained experience with advance refunding, the distinction between the three original types of refunding became somewhat blurred. Between 1962 and 1965, all of the advance refundings were combinations of prerefunding and junior refunding operations. Such operations became rather complex, with as many as nine outstanding issues eligible for exchange into as many as three new issues. For example, in January 1965, holders of seven issues of bonds and notes scheduled to mature in 1965, 1966, and 1967 were given the opportunity to exchange these issues for any of three new bond issues with maturities ranging from 5 to over 25 years.

As Chart 2 illustrates, advance refunding has been used more than any other method of marketing bonds since its introduction in 1960. Through eleven advance refunding operations, the Treasury extended nearly \$68 billion of securities into longer-term issues. By the end of fiscal 1966, 72 percent of the \$17 billion of securities maturing in over 20 years and 53 percent of the outstanding 5- to 20-year bonds had been issued in advance refunding operations. In its last two advance refundings, conducted in July 1964 and January 1965, \$26.5 billion and \$22 billion of publicly held issues were eligible for exchange.

Chart 2.

DOLLAR VOLUME of BONDS OFFERED by U.S. TREASURY By Type of Financing

Billions of Dollars



Last entry: 1965

Source: Treasury Bulletin

Combined, these two operations extended more than \$18 billion of these securities.

Bond Auctions. In 1963, the Treasury experimented with a fifth marketing technique when it sold two bond issues through competitive bidding to underwriting syndicates. With this procedure, the Treasury attempted to institute a marketing method similar to that used in selling corporate and municipal bonds. The syndicate submitting the highest bid won the right to reoffer the bonds to the public at a price set by the underwriters. For example, at the first bond auction in January 1963, the winning bid for the \$250 million 30-year bonds was 99.85111 per \$100 for 4 percent bonds of 1988-1993—an interest cost to

the Treasury of 4.008 percent.⁵ This operation was a success in that the securities were all placed with the public, at par, within two days. A second auction in April was not as successful because of the difficulties dealers encountered in reselling the issues to the public. As a result of these difficulties and the possibility that dealers might be unwilling to participate in future offerings, this marketing

⁵Lawrence Banyas, "New Techniques in Debt Management Since the Late 1950's," *Treasury-Federal Reserve Study of the U. S. Government Securities Market*, (Washington D. C.: Board of Governors of the Federal Reserve System, 1967), p. 23.

technique has not been used by the Treasury since 1963.

Primary Market Participants. The principal subscribers to initial Treasury bond offerings have been the Government securities dealers, commercial banks, mutual savings banks, savings and loan associations, life insurance companies, state and local governments' pension and retirement funds, and the United States Government trust accounts. Banks and the savings institutions concentrate most of their purchases in the intermediate-term sector because of the short-term nature of their liabilities. The main subscribers to long-term issues have been life insurance companies, pension funds, and Government investment accounts. The Government securities dealers usually subscribe for a significant share of all new issues, but generally are temporary holders.

Dealer Participation. Active dealer participation is essential if a new bond issue is to be marketed successfully. In addition to entering large subscriptions for new issues in what are basically underwriting operations, the dealers assist the Treasury financing by informing their customers and other investors about the terms of a new issue and the mechanics of the subscription process. In regular exchange refundings, the dealers purchase large volumes of rights in addition to those they expect to sell to investors interested in the new securities. The dealers thereby acquire a position in the new issues in the hope that they will be able to sell the new securities at higher prices in the days immediately following the sale. In the eight regular exchange offerings of longer-term options over the 1961-1965 period, dealer participations averaged 32 percent of total public subscriptions. After their when-issued sales and other sales before the

settlement date, the dealers still held an average of one-half of their original subscriptions.⁶

Dealers were also very active in distributing securities issued in advance refundings, particularly in the longer maturities. During the advance refundings of 1963-1965, dealer conversions ranged from 62 to 73 percent of total public conversions into issues maturing in over 10 years, but only 12 to 31 percent of public exchanges into 5- to 10-year maturities. An indication of the underwriting operations dealers conducted during the advance refundings is that their net positions on the days the books closed totaled over \$2 billion in the last three advance refunding operations.⁷ Dealers are less active in sales of new bond issues for cash, because the Treasury usually sets a maximum allotment for dealer subscriptions.

SECONDARY MARKET

The current secondary market for Government bonds developed during World War I. Prior to 1900, most trading in Government bonds was done through brokerage houses and the stock exchange. A specialized over-the-counter market was developed around 1900 by a few dealers to serve commercial banks that were required to purchase large amounts of bonds to obtain Federal deposits and issue currency under the provisions of the National Banking Act of 1900. When these dealers demonstrated their ability to handle efficiently the extremely large individual transactions necessary to finance defense spending

⁶Paul Meek, "The Changing Structure of the Dealer Market in Government Securities," *Treasury-Federal Reserve Study of the U. S. Government Securities Market*, (Washington, D. C.: Board of Governors of the Federal Reserve System, 1967), p. 31.

⁷*Ibid.*, p. 35.

during World War I, the majority of bond trading shifted from the stock exchange to the dealer market.

The dealer market is centered in New York City's financial district where firms that specialize in making markets for Government securities maintain their trading offices. A dealer makes a market in a security by quoting a bid and asked price at which he will buy or sell the security. Treasury bonds are quoted on a price basis in fractions of 1/32 of a point, with \$100 representing the par value of a bond. The spread between the bid and asked prices determines the dealer's margin on a trade.

Spreads vary directly with the term to maturity of the issue quoted. For example, recent quotes on two bonds were 98.20 bid and 98.24 asked for 4-percent bonds maturing in August 1972, and 80.24 bid and 81.24 asked for 3 1/2-percent bonds maturing in February 1990.⁸ The spreads were 4/32 of a point or 12 1/2 cents per \$100 transaction on the issue close to maturity, and a full point or \$1 per \$100 transaction on the long-term issue. The published prices are the "outside" prices and may not be the actual prices at which a trade is effected. Often a dealer will shade his price somewhat in order to handle a large transaction, and the negotiated or "inside" price may result in a spread smaller than the quoted spread.

Table I shows the average daily volume of dealer transactions in long-term Government securities during the past ten years. In view of the fact that virtually all trading in longer-term Government securities is done through the dealers, these data are close estimates of the average

TABLE I

Dealer Transactions in Government Securities
1961-1970, Averages of Daily Figures
(Millions of Dollars)

	Maturity	
	5-10 Years	Over 10 Years
1961	\$ 53.3	\$30.3
1962	120.9	36.6
1963	142.8	50.3
1964	126.3	41.3
1965	101.7	49.7
1966	110.2	36.3
1967	68.3	34.3
1968	121.1	32.8
1969	86.8	39.0
1970	136.0	33.8
1961-1970 average	106.7	38.4

Source: *Federal Reserve Bulletin*

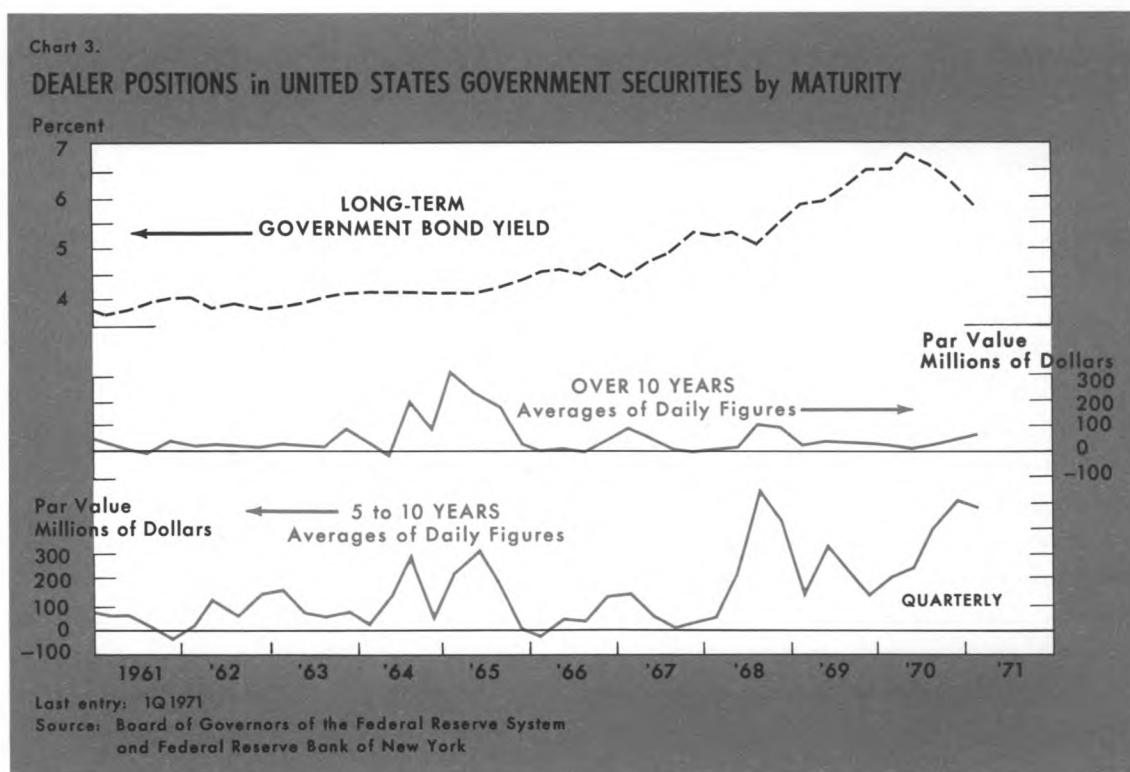
amount of trading in Government bonds maturing beyond 10 years.⁹

A comparison of this level of trading activity with that in the corporate bond markets attests to the breadth of the market for Government bonds and, hence, the superior marketability of these securities. The daily volume of corporate bonds traded on the registered exchanges averaged \$19 million in 1970 and \$25 million in 1968, the peak year for bond trading. In each year since 1960, the average daily volume of trading in Government bonds with maturities beyond 10 years has substantially exceeded the volume of organized trading in all seasoned corporate bonds.

Trading in Government bonds is facilitated by the willingness of the dealers to maintain substantial positions in these securities. The size of dealer positions in securities of a particular maturity is

⁸Price quotations from the *Wall Street Journal*, May 28, 1971.

⁹The 5- to 10-year maturity category contains transactions in 5- to 7-year Treasury notes as well as bonds so that the totals in this group overstate the actual trading in bonds.



often cited as one measure of the quality of that segment of the market. If dealers have sizable positions in a security, they can accommodate a trade quickly and at a relatively low spread. Light dealer positions often indicate market conditions in which an investor may have difficulty selling a large block of securities.

The data in Chart 3 suggest that the secondary market for Government bonds maturing beyond 10 years is thinner than the market for 5- to 10-year Government securities, and that dealer positions in both maturity sectors exhibit a great deal of cyclical variation. Average dealer positions reflect both the nature of market trading activity and the dealers' response to the prevailing economic environment. The majority of trading in Government bonds is in the 5- to 10-year issues;

therefore, dealers generally have maintained larger positions in these securities than in issues maturing beyond 10 years. Dealers held unusually large positions in bonds maturing beyond 10 years during 1964-1965 because of the increased trading in such issues associated with advance refunding operations.

It is evident from Chart 3 that movements in interest rates also influence dealer positions. Dealers added to their inventories when interest rates were stable or falling (1964-1965 and 1968) and reduced their positions when rates were rising and kept them low while rates remained high (most of 1966-1967 and 1969-1970). Inventories are reduced during periods of rising interest rates for two reasons: high rates make inventories expensive to carry (they are financed almost

entirely with short-term loans), and the decline in bond prices that accompanies rising interest rates results in capital losses on securities held in inventory. Because a rise in market rates result in a sharper decline in prices of long-term issues, dealers are especially reluctant to hold long-term securities when rates are rising or expected to increase. Thus, the quality of the long-term market especially suffers when interest rates are rising.¹⁰

A recent study found signs that wide swings in bond prices after 1965 had an adverse effect on the quality of the secondary market for long-term bonds.¹¹ Investors reported a deterioration in the performance of the dealer market during 1966 as reflected by a shrinkage in the size of transactions dealers were willing to handle, wider price spreads on most issues combined with increased dealer reluctance to undertake large transactions at the quoted prices, and a withdrawal of many dealers from the long-term market. During 1966, only two or three out of approximately twenty primary dealers were willing to purchase sizable amounts of long- and intermediate-term Treasury bonds at prices near quoted market prices. At times during this period, market conditions were so unsettled that it became difficult for investors to execute bond sales of any magnitude. Thus, while the secondary market for Treasury bonds has had adequate strength and breadth during periods of economic stability, the market has deteriorated during periods of stress to the point where its capacity to maintain the marketability of long-term bonds has been somewhat impaired.

¹⁰For a more detailed discussion of the dealer market and dealer financing see, "Repurchase Agreements: Their Role in Dealer Financing and Monetary Policy," *Money Market Instruments*, (Federal Reserve Bank of Cleveland, 1970), pp. 42-55.

¹¹Paul Meek, *op. cit.*, p. 47.

OWNERSHIP OF GOVERNMENT BONDS

By the end of World War II, approximately three-fourths of outstanding marketable Government bonds were owned by financial institutions—commercial banks, mutual savings banks, savings and loan associations, and insurance companies. These bonds were purchased during the war years when relatively few private debt instruments were available and the Treasury's policy of holding down long-term interest rates made long-term bonds nearly as liquid as cash. When this policy was ended in 1951, Government bonds became rather illiquid investments and, consequently, less suitable as secondary reserve assets for financial institutions. Government bonds also became less attractive investment assets when corporations, individuals, and state and local governments began issuing debt at more attractive yields. Although they still own significant amounts of Government bonds, the availability of these alternative investments has prompted financial institutions to reduce their ownership share of the outstanding debt (see Table II). The only group to increase its ownership share has been the Federal Government's trust funds, which are captive buyers; i.e., they are limited by law to investing in Government securities.¹²

Commercial Banks. Commercial banks hold large volumes of Treasury securities, including bonds, as secondary reserves. The active secondary market, the wide range of available maturities, the large supply of securities in each maturity bracket, and their competitive yields make Government

¹²The "other" category in the survey is a residual category and, as such, it reflects all the uncertainties and errors of estimation of the other ownership series. The rather large share of total bonds outstanding that are allocated to this category adds some uncertainty to any analysis of changes in bond ownership.

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TABLE II

Ownership of U. S. Government Bonds
Percent Distribution for Year
1960-1970

	Total		U. S. Government Accounts and Federal Reserve Banks	Commercial Banks	Savings Institutions	Insurance Companies	State and Local Governments	Other
	(Mil. of \$)	(Percent)						
1960								
5-10 years	\$18,683	100.0%	14.9%	30.3%	12.4%	11.1%	n.a.	31.3%
Over 10 years	24,205	100.0	11.9	9.6	11.9	14.3	n.a.	52.4
1961								
5-10 years	15,918	100.0	20.4	26.4	12.3	9.0	4.1%	27.8
Over 10 years	29,258	100.0	15.8	10.1	10.7	14.1	16.9	32.3
1962								
5-10 years	33,985	100.0	14.2	32.8	9.5	6.5	4.4	32.4
Over 10 years	20,104	100.0	20.1	3.0	10.9	17.9	23.4	24.6
1963								
5-10 years	35,684	100.0	14.5	31.0	9.0	6.5	4.2	34.8
Over 10 years	23,998	100.0	22.2	4.2	9.8	15.5	22.4	25.9
1964								
5-10 years	36,423	100.0	13.6	30.3	8.4	6.6	5.5	35.6
Over 10 years	23,573	100.0	21.8	2.9	8.9	15.7	26.0	24.6
1965								
5-10 years	35,013	100.0	13.7	33.2	8.5	6.0	5.4	33.2
Over 10 years	25,593	100.0	23.2	3.9	8.6	14.8	24.9	24.5
1966								
5-10 years	28,005	100.0	12.6	33.4	8.0	5.6	5.4	35.1
Over 10 years	25,355	100.0	23.6	3.5	7.9	14.8	24.3	25.8
1967								
5-10 years	17,207	100.0	16.3	34.0	8.1	5.1	5.1	31.5
Over 10 years	25,094	100.0	24.6	3.9	7.4	14.2	22.2	27.6
1968								
5-10 years	8,957	100.0	20.4	36.5	6.5	4.1	4.6	28.0
Over 10 years	24,810	100.0	24.6	4.4	7.3	13.5	20.0	30.3
1969								
5-10 years*	—0—	—0—	—0—	—0—	—0—	—0—	—0—	—0—
Over 10 years	24,413	100.0	25.3	4.0	6.9	13.2	16.9	33.7
1970								
5-10 years	4,497	100.0	32.9	7.9	5.8	13.5	12.0	27.8
Over 10 years	19,419	100.0	24.7	3.2	6.3	13.4	14.4	38.0

n.a. Not available.

NOTE: Details may not add to totals because of rounding.

* In 1969, none of the outstanding bonds fell into the 5-10 year maturity range: \$8.9 billion of bonds maturing in 1974 had moved into the under 5-year maturity range, and \$4.5 billion of 1980 maturities were still eleven years from maturity.

Source: U. S. Treasury Bulletin

securities ideal secondary reserve assets. Bank holdings are concentrated primarily in the shorter-term maturities, which are more liquid and are therefore better suited for the continuing money position and investment portfolio adjustments banks must make. In general, the maturity range of bank investments does not extend much beyond 10 years, a tendency reflected by the data in Table II. Commercial banks have typically held around one-third of the outstanding Government bonds in the 5- to 10-year maturity range, but only about 4 percent of the total outstanding bonds maturing beyond 10 years. During the decade of the 1950's, this latter share varied between 8 and 10 percent; since 1962, the range has been between 3 and 4 percent of a much smaller stock of outstanding bonds. This lower share was the result of the steady increase in economic activity since the 1960-1961 recession and the attendant growth in the demand for bank credit. During periods of intense loan demand, commercial banks typically reduce the level of their securities holdings. To maintain the liquidity of their securities portfolio, they tend to reduce the longer-term portion of their portfolio first by not replacing the long-term securities that move into the shorter maturity range. An example of this occurred in 1962 when a large block of bonds in which banks had a major ownership share moved into the 5- to 10-year maturity range and were not replaced by other long-term issues. Throughout the remainder of the 1960's, credit demands remained strong, and the share of outstanding long-term bonds held by banks remained quite low.

Savings Institutions. The nonbank savings institutions—savings and loan associations and mutual savings banks—have gradually reduced their holdings of Government bonds in recent years and

have allocated more of their funds to investment in real estate mortgages and corporate bonds. They continue to hold a significant share of outstanding Treasury bonds, however, chiefly as secondary reserves to provide for both anticipated and unanticipated cash needs. Because their deposit liabilities are ordinarily less volatile than those of commercial banks, their portfolio of Government securities can be less liquid. Thus the savings institutions hold larger amounts of long-term bonds than banks do. Since 1962, their proportionate holdings of long-term bonds have generally been larger than those in the 5- to 10-year category. Apparently when these institutions liquidated Government bonds to raise funds to meet the demand for mortgage credit, they sold shorter-term bonds, allowing their long-term holdings to be reduced by the natural movement of outstanding issues toward maturity. Some floor on the level of holdings of these institutions is provided by the requirement that members of the Federal Home Loan Bank (FHLB) System must maintain a liquidity position in cash and/or Government securities of between 4 and 8 percent of deposits. Given the higher yields available on longer-term issues, these institutions can be expected to continue holding long-term bonds to meet a major portion of the FHLB requirement.

Insurance Companies. Life insurance companies account for most (65 percent in 1970) of the Treasury bonds owned by all insurance companies and nearly all (80 percent) of those maturing in over 10 years. Since the cash flow of life insurance companies is highly predictable, they are able to hold large amounts of long-term securities. The size and potential variability of the loss claims of the non-life insurance companies force them to maintain rather large liquidity reserves. Thus their bond holdings are primarily in the 1- to 5- and 5-

to 10-year maturities. The gradual decline in the share of total Treasury bonds outstanding owned by all insurance companies since 1962 reflects the increased availability of alternative high-grade investments offering income advantages over Government bonds.

State and Local Governments. State and local governments hold Federal Government bonds both as investment outlets for surplus general funds and as major assets in the portfolios of their pension funds. The long-term nature of their liabilities, together with laws or regulations requiring these funds to invest some fraction of their assets in Government securities, has made the state and local pension funds one of the principal groups holding long-term bonds. These regulations are gradually being liberalized. Pension funds, therefore, have been broadening the mix of assets they hold, and their share in the total ownership of Government bonds has fallen.

Federal Government Trust Funds. The United States Government trust funds hold nearly all of the bonds included in the ownership category "United States Government accounts and Federal Reserve banks." (The Federal Reserve's long-term bond portfolio is very limited, amounting to only \$1.5 billion in 1960 and only \$3 billion in 1970, because its open market operations are confined largely to short-term Government securities.) The Government trust funds are required by law to invest their funds in direct or guaranteed obligations of the United States Government. Income and safety rather than liquidity are the important considerations in determining their investment strategy; therefore, these trust funds invest heavily in long-term bonds. The Government trust funds currently hold about one-fourth of the outstanding bonds maturing beyond 10 years, and are the only group (besides the "other" category) to

have increased its ownership share of these long-term bonds.

YIELDS ON GOVERNMENT BONDS

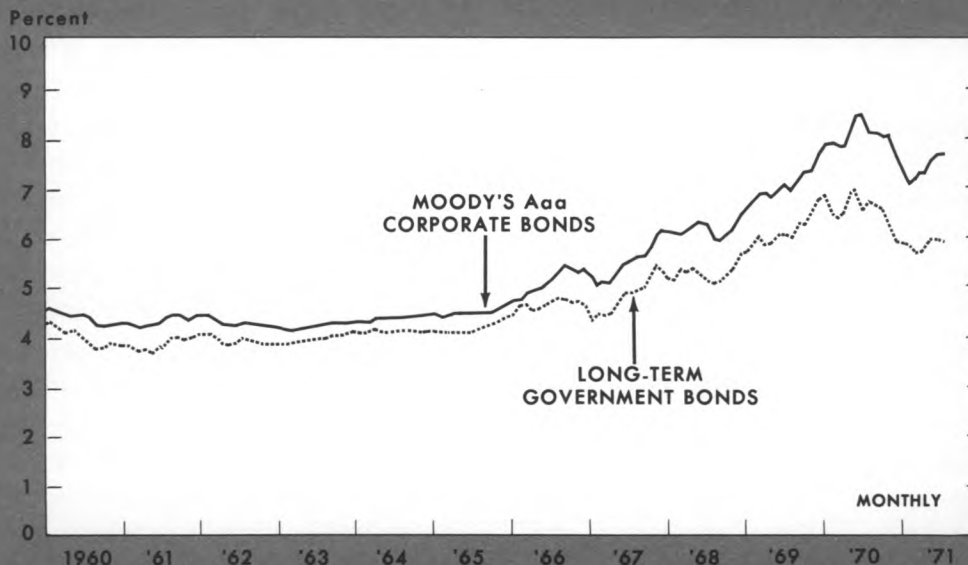
A highly developed secondary market for Government bonds, together with the absence of default risk, has kept yields on these bonds below yields on other debt instruments of comparable maturities (except tax-exempt securities). Over time, however, the yields on all capital market debt instruments move together. During the first half of the 1960's, capital market yields were relatively stable; and yields on long-term Government bonds fluctuated within a narrow range around the 4 percent level (see Chart 4).¹³ From 1965 through the first half of 1970, yields rose sharply; the yield on long-term Governments averaged 7.0 percent in June 1970, compared with an average of 4.2 percent in July 1965.

As a result of even greater increases in corporate bond yields, the spread between yields on Government bonds and Aaa corporate bonds has become unusually large. Before 1966, the average spread fluctuated between a high of 55 basis points in July 1960 and a low of 20 basis points in March 1964. Since 1966, this spread has increased sharply, reaching an average of 187 basis points in July 1970.

Changes in relative supply in the two markets appear to be partly responsible for this wider yield spread. Yields on seasoned securities generally adjust quickly to changes in yields on new issues. From mid-1965 through 1970, the Treasury did not offer new bonds, whereas yields on new corporate bonds rose sharply, due in part to a

¹³Yields on Government bonds are monthly averages of daily figures for bonds maturing or callable in 10 years or more.

Chart 4.

YIELDS on LONG-TERM GOVERNMENT BONDS and Aaa CORPORATE BONDS

Last entry: July 1971

Source: Board of Governors of the Federal Reserve System

historically high volume of new corporate bond offerings. The result was a widening in the yield differential.

BONDS AND DEBT MANAGEMENT POLICY

The Treasury's task of managing the public debt has been greatly complicated by its inability to sell bonds since 1965. The average length of the debt has decreased from five years, four months in mid-1965 to a historical low of three years, four months at the end of 1970. As a consequence of this shortening, the Treasury must refund \$26 billion of coupon issues during fiscal 1972, and \$70 billion, or 47 percent, of currently outstanding coupon issues are scheduled to mature between January 1972 and December 1974.

Refundings of this magnitude will require frequent and sizable Treasury debt offerings, which will complicate not only Treasury borrowing operations but also debt sales by other capital market borrowers and the Federal Reserve's monetary policy operations.¹⁴ Even a few Government bond offerings in the past few years would have resulted in a more orderly schedule of maturing issues and made near-term Treasury financings much easier.

The question of the proper time for the Treasury to sell long-term bonds has yet to be

¹⁴For an analysis of the debt management problems created by a shorter maturity structure see, Michael J. Prell, "The Treasury Debt and Bond Rate Ceilings," *Monthly Review*, Federal Reserve Bank of Kansas City, April 1971, pp. 9-16.

resolved. Since the 1951 Accord, the Treasury's policy has been to float long-term issues when market conditions were such that they could be sold successfully with a minimum of disruption to the rest of the capital markets. This has precluded bond sales when private demand for long-term credit is strong. In recent years, a number of economists and financial observers, perhaps believing that strong private demand has become a permanent feature of the United States capital markets, have suggested that the Treasury change its procedure for issuing bonds. They would have the Treasury initiate regularly scheduled offerings of relatively constant amounts of long-term bonds. For example, the Treasury might conduct one or two sales per year with \$2-\$4 billion of bonds marketed at each offering. Implementation of this policy would require the total repeal of the current 4 1/4 percent ceiling and a significant change in the mechanics of bond sales. The advantages of such a program would be a reduction in the uncertainty that usually accompanies Treasury bond sales, a simplified bond issuing procedure and, eventually, better

control by the Treasury over the long-term sector of the debt.

In addition, this procedure, or any alternative technique that would allow the Treasury to market bonds under a variety of market conditions, is needed to sustain a healthy secondary market. Private investors have been holding a steadily declining volume of Government bonds, as an increasing share of a shrinking total supply has been acquired by the Federal Government's trust accounts. A continuation of this trend could seriously weaken the secondary market, which requires that a substantial volume of securities of all maturities be available for trading. A thin secondary market would in turn weaken the primary market for Government bonds, since part of their attractiveness to investors stems from the assurance that they can be resold on an active secondary market. It would appear, therefore, that some changes in the Treasury's marketing policies are required if Government bonds are to retain their role as the central debt instrument in the capital market.

CHARACTERISTICS OF BANKS ACQUIRED BY MULTIPLE BANK HOLDING COMPANIES IN OHIO

Robert F. Ware

In recent years, the number of acquisitions of commercial banks by multiple bank holding companies increased substantially in both the United States and Ohio.¹ In 1960, registered bank holding companies controlled 3 percent of all banks that held nearly 8 percent of the total deposits in the nation's banking system. By 1970, the number of banks and the amount of total deposits controlled by multiple bank holding companies had increased to 6 percent of the total banks and to nearly 16 percent of the total deposits at all banks in the United States.

The growth of registered bank holding company activity has been greater in Ohio than it has been in the United States as a whole.² From 1960

through 1970, the number of banks affiliated with registered bank holding companies in Ohio increased from 24 to 55 or by 129 percent, while the amount of deposits held by banks affiliated with holding companies increased from nearly 6 to 23 percent of the total deposits at all insured banks in Ohio.

The extensive activity by registered bank holding companies in Ohio and in the nation in recent years raises questions about the nature of the acquired banks; that is, what types of banks are being acquired by registered bank holding companies and how do they compare with banks that have not been acquired by holding companies? This article reports on a study of the performance characteristics of banks that were acquired by registered bank holding companies in Ohio since 1965.³ A total of 60 banks were included in the study—30 acquired banks and 30 nonacquired banks. Each acquired bank was paired with a similar size nonacquired bank located in the same market area. The object of this pairing procedure was to eliminate extraneous sources of differences

¹ This article deals only with bank holding companies that control two or more banks and that were registered with the Federal Reserve System prior to December 31, 1970. As of that date, all bank holding companies that control one or more banks were required to register with the Federal Reserve.

² For a detailed discussion of registered bank holding company activity in Ohio, see "Registered Bank Holding Company Activity in Ohio, 1964-1969" *Economic Review*, Federal Reserve Bank of Cleveland, September 1970, and "Registered Bank Holding Company Activity in Ohio in 1970," *Economic Commentary*, Federal Reserve Bank of Cleveland, March 1, 1971.

³ The study excluded the lead banks of any holding companies formed during this time period. The lead bank is defined as the bank that actually leads the formation of the holding company.

between acquired and nonacquired banks (in particular size and location). In this way, the remaining differences could be attributed, with greater justification, to the fact that one bank and not the other was acquired by a holding company. Several performance variables that provide an overall view of bank characteristics were then examined to determine if any significant difference existed between the two groups of banks.⁴

The data for the study were taken from two "Reports of Condition" immediately preceding the acquisition and from "Reports of Earnings and Dividends" for the yearend preceding the acquisition.⁵

SIZE OF ACQUIRED BANKS

Since the study was specifically designed so that the acquired banks were of nearly the same size as the nonacquired banks, it was of interest to determine whether the average size of the acquired banks was larger or smaller than the average size of all insured banks in Ohio. The 30 acquired banks

had an average size of \$37 million in assets, \$33 million in deposits, and \$29 million in loans at the time they were acquired by registered bank holding companies. This compares to an average size for all insured banks in Ohio during the 1965-1970 period of \$38 million in assets, \$33 million in deposits, and \$20 million in loans. Thus, it appears that banks acquired by registered bank holding companies in Ohio during 1965-1970 were approximately the same average size as all insured banks in Ohio during the same period.

Over one-half of the 30 acquired banks had assets, deposits, and loans of \$30 million or less at the time they were acquired by registered bank holding companies; and over three-fourths of the banks had loans of \$30 million or less (Table I).

While the average size of all insured banks in Ohio has increased over the 1965-1970 period, it appears that the increase in the size of banks acquired by registered bank holding companies was greater than the increase in the average size of all banks. From January 1965 to December 1969, all insured banks in Ohio had an average size of \$36 million in assets, \$32 million in deposits, and \$20 million in loans. In 1970, the assets, deposits, and loans of Ohio banks had increased, on average, 26, 20, and 26 percent, respectively.

The ten banks that were acquired by registered bank holding companies from January 1965 to December 1969 had an average size of \$23 million in assets, \$21 million in total deposits, and \$12 million in gross loans. In comparison, the average size of the 20 banks acquired by registered bank holding companies from January 1970 to January 1971 had 98 percent more assets, 95 percent more deposits, and 117 percent more loans outstanding. Thus, it appears that registered bank holding companies have not only increased the number of acquisitions in recent years, but that they also

⁴The analysis was based on a comparison of selected balance sheet items and operating ratios of acquired and nonacquired banks. The means of ratios and their standard deviations were calculated for the acquired and nonacquired banks, as well as the mean of the differences of the ratios and their standard deviations. A paired t-test was made to determine whether the means of the differences of the ratios for acquired and nonacquired banks were significantly different. For example, see Wilfred J. Dixon and Frank J. Massey, Jr., *Introduction to Statistical Analysis* (3rd ed.; New York: McGraw-Hill Book Company, 1969), pp. 119-123. Results of the computations are available on request.

⁵The various bank regulatory agencies require that banks file a quarterly "Report of Condition" and an annual "Report of Dividends and Earnings." For this study, two "Reports of Condition" preceding the acquisition were averaged.

TABLE I

Distribution of 30 Acquired Banks by Assets, Deposits, and Loans
Fourth Federal Reserve District
1965-1970

Classification (Mil. of \$)	1965			1966			1967			1968			1969			1970*		
	Assets	Deposits	Loans	Assets	Deposits	Loans	Assets	Deposits	Loans	Assets	Deposits	Loans	Assets	Deposits	Loans	Assets	Deposits	Loans
Under \$2						1												
\$2 to \$5				1	1				1				1	1		1	1	2
\$5 to \$10			1										1	1		1	2	3
\$10 to \$20	2	2	1				1	1			1	1	1	1	1	2	3	4
\$20 to \$30										1		1	1	1		5	3	7
\$30 to \$40									1							1	3	3
\$40 to \$50										1	1					5	4	
\$50 to \$100							1	1								4	3	
\$100 to \$200																1	1	1
TOTAL	2	2	2	1	1	1	2	2	2	2	2	2	3	3	3	20	20	20

*Includes two acquisitions consummated in early 1971.

Source: Federal Reserve Bank of Cleveland

TABLE II

Average Annual Growth Rates of Assets,
Deposits, and Loans for 25 Acquired
and 25 Nonacquired Banks*
Fourth Federal Reserve District
Five Years Prior to Acquisition

	Acquired Banks	Nonacquired Banks	Difference Between Means
	Mean	Mean	
Assets	6.92% (2.78)	8.10% (4.33)	-1.18% (4.41)
Deposits	6.77% (2.91)	7.88% (4.51)	-1.11% (4.46)
Loans†	6.13% (2.63)	9.63% (5.09)	-3.50% (5.61)

NOTE: Standard deviations are in parentheses, and the standard errors of the means can be obtained by dividing these figures by \sqrt{N} .

* Five pairs of banks had to be deleted from the sample of 30 paired banks because they were involved in merger activity during the five-year period.

† The average of the differences between the ratios is statistically significant at the 1 percent confidence level.

Source: Federal Reserve Bank of Cleveland

have been acquiring larger banks than they did previously.

COMPARISON OF GROWTH RATES

The average annual rates of growth of assets, deposits, and loans for the five years prior to the acquisition of the acquired banks were lower for the acquired banks than they were for the nonacquired banks (Table II). In fact, the growth rate of loans for nonacquired banks was significantly higher than it was for the acquired banks.⁶ The lower growth rates may be one reason why the acquired banks became affiliates of a registered bank holding company. It may be hypothesized that the acquired banks were not aggressive competitors in their banking markets for the five years prior to their acquisition. This lack of aggressive-

⁶The difference in loan growth rates was statistically significant at the 1 percent level.

ness may be considered either a cause or a symptom of the owners' willingness to sell the bank and, in turn, has often been associated with a loss of management through death or retirement.⁷ Sale to a holding company then is viewed as a desirable alternative to seeking new management or merging with one of the bank's competitors.

COMPARISON OF BALANCE SHEET ITEMS

Asset structure of the 30 banks acquired by registered bank holding companies and of the 30 nonacquired banks indicates little difference between the two bank groups during the 1965-1970 period (Table III). Both acquired and nonacquired banks held over one-half of their assets in various types of loans and about 21 percent of their assets in U. S. Government securities. Acquired and nonacquired banks held about the same proportion of their assets in cash (11 percent), as well as in state and local obligations.

The similarity in the asset structure of acquired and nonacquired banks is not too surprising, because each set of banks was of similar size and located in the same banking market. Results of this study are consistent with other evidence that suggests bank size is an important variable in influencing the structure of a bank's assets (e.g., the larger the bank the smaller the proportion of total assets held in government securities).⁸ There-

⁷Management succession problems were found to be an apparent consideration in holding company acquisitions by Steven J. Weiss, "Bank Holding Companies and Public Policy," *New England Economic Review*, Federal Reserve Bank of Boston, January/February 1969, p. 21, and Gerald C. Fischer, *Bank Holding Companies* (New York and London: Columbia University Press, 1961), p. 140.

⁸For discussion on size and asset structure, see "Average Functional Cost and Revenue for Banks in Three Size Categories 1966-1969," *Economic Review*, Federal Reserve Bank of Cleveland, April 1971, p. 7.

TABLE III

Selected Balance Sheet Ratios for 30 Acquired and 30 Nonacquired Banks
Fourth Federal Reserve District
Year Prior to Acquisition

	Acquired Banks	Nonacquired Banks	Difference Between Means
	Mean	Mean	
<u>Asset Structure</u>			
(As percent of total assets)			
Cash and due from banks	10.55% (3.08)	11.03% (2.97)	-0.48% (4.66)
Gross loans	52.38% (9.78)	51.87% (6.79)	0.51% (7.76)
U. S. Government securities	21.30% (10.93)	20.67% (7.56)	0.63% (9.19)
State and local obligations	11.27% (5.79)	11.83% (5.60)	-0.56% (7.39)
<u>Loan Portfolio</u>			
(As percent of gross loans)			
Farm loans	8.44% (8.70)	9.57% (9.91)	-1.13% (6.58)
Residential mortgage loans	23.01% (9.89)	25.23% (10.00)	-2.22% (10.82)
Instalment loans	32.11% (13.46)	28.52% (10.78)	3.59% (14.13)
Business loans	16.36% (7.33)	16.59% (8.41)	-0.23% (8.46)
<u>Deposit Structure</u>			
(As percent of total deposits)			
IPC demand	30.75% (8.86)	33.03% (10.70)	-2.28% (10.20)
Time and savings deposits	63.06% (10.16)	59.74% (12.30)	3.32% (11.71)
Deposits of U. S. Government	1.37% (0.87)	1.40% (0.80)	-0.03% (0.72)
<u>Selected Ratios</u>			
Gross loans/total deposits	58.90% (11.08)	58.76% (8.21)	0.14% (9.07)
Total capital/total deposits	8.55% (1.71)	9.21% (1.93)	-0.66% (2.26)
Total capital + reserves on loans/total deposits	9.47% (1.80)	10.07% (2.03)	-0.60% (2.35)
Loan losses/gross loans*	0.18% (0.13)	0.25% (0.20)	-0.07% (0.22)

NOTE: Standard deviations are in parentheses, and the standard errors of the means can be obtained by dividing these figures by \sqrt{N} .

* The average of the differences between the ratios is statistically significant at the 10 percent confidence level.

Source: Federal Reserve Bank of Cleveland

fore, the study did not indicate significant differences between the asset structure of banks that became affiliated with registered bank holding companies and the nonacquired banks.

Comparison of the loan portfolio composition of the acquired banks with the nonacquired banks indicates some differences, although they are not statistically significant (Table III). Just prior to their acquisition, acquired banks had nearly one-third of their total loans in consumer instalment loans and slightly less than one-quarter in residential mortgage loans (23 percent). Farm loans comprised about 8 percent of the acquired bank total loans, while loans to businesses made up approximately 16 percent of the loan portfolios. The nonacquired banks held a slightly higher percentage of their total loans in residential mortgages (25 percent) and farm loans (10 percent). Consumer instalment loans accounted for a smaller proportion of total loans at the nonacquired banks than at the acquired banks, and loans to businesses were approximately the same for both groups of banks.

The small differences between the loan portfolios of the acquired and the nonacquired banks could be considered an indication that, on average, the acquired banks were slightly more consumer oriented than the nonacquired banks. Generally, however, bank size influences the makeup of bank loan portfolios as it does asset structure.⁹ Since the two bank groups in this study were similar in size, the slight differences between their loan portfolios do not display any particular pattern that could be attributed to the type of bank likely to be acquired by registered bank holding companies in Ohio.

The deposit structure of acquired banks was also found to be slightly different than for nonacquired banks. Acquired banks had 30 percent of their deposits in demand accounts of individuals, partnerships, and corporations (IPC) and approximately 63 percent in time and savings deposits. The nonacquired banks had one-third of total deposits in IPC demand accounts and nearly 60 percent in time and savings accounts. These figures imply that, on average, the acquired banks may have shown a slight preference for time and savings deposits, although these differences are not statistically significant.

Finally, various balance sheet ratios showed relatively little difference in the performance of acquired and nonacquired banks. For example, the average gross loan/total deposit ratios for the acquired and nonacquired banks were nearly identical at the time the acquisition was consummated (Table III). At the same time, the capital deposit ratios were slightly higher for the nonacquired banks. This may indicate that the acquired banks found it necessary to raise additional capital prior to their acquisition, which partially explains their affiliation with a registered bank holding company. On the other hand, the average loan loss/gross loan ratio was lower for the acquired banks than for the nonacquired banks, which is consistent with the statistically significant lower average annual growth rate in gross loans that the acquired banks experienced for five years prior to their affiliation. Generally, it is expected that the more aggressively a bank seeks to make loans, the higher its loan/loss ratio.

COMPARISON OF OPERATING RATIOS

Earnings. The earnings generated by the acquired banks just prior to their acquisition by registered bank holding companies appear to have

⁹*Ibid.* p. 8.

been slightly higher than for the group of non-acquired banks (Table IV). The acquired banks were found to have higher earnings on gross loans, IPC demand deposits, U. S. Government securities, and other securities. In fact, the total operating income as a percent of total assets of the acquired banks was found to be significantly greater (statistically) for the acquired banks than for the nonacquired banks. The higher earnings of the acquired banks may be partially explained by the higher proportion of instalment loans held by the acquired banks than by the other group of banks in this study.¹⁰ The figures may also indicate that the group of acquired banks had slightly higher prices on loans and demand deposits than the nonacquired banks. Of course, the figures do not take into account agreements such as compensating balances that may have been used by the banks.

Expenses. Although earnings of acquired banks were larger than for nonacquired banks, expenses of acquired banks were also larger. The wage and salary expenses, interest on time and savings deposits, and other operating expenses (all as a percent of total assets) for the acquired banks were slightly greater than for the nonacquired banks. The total operating expenses of the acquired banks amounted to 4.3 percent of total assets compared with 4.0 percent for the group of nonacquired banks. Part of the higher expenses may be explained by the larger proportion of time and savings deposits held by the acquired banks.

Profitability. Based upon three indexes of profitability, banks acquired by registered bank holding companies appear to be just as profitable

as the group of nonacquired banks (Table IV). The first measure of profitability—net income (after taxes) to total capital—indicates the rate of return that a bank's stockholders receive on their investment. On average, the acquired banks seem to have achieved a slightly higher rate of return (11.5 percent) than the nonacquired banks (10.9 percent). Although the difference is not statistically significant, the higher rate may be a result of the lower capitalization of the acquired banks. The ratio of net income after taxes to total assets indicates how profitably a bank has been utilizing its total resources in terms of after-tax income. In this comparison, both the acquired and non-acquired banks seem to be equally profitable. The third measure—net operating earnings to total assets—reflects how profitable current operations have been in terms of total resources. This index excludes several nonoperating items (charge-offs in recoveries on loans and investments, transfers to or from reserve accounts, and profit or losses on sales of securities) and does not indicate the actual return to stockholders. Again, both the acquired and the nonacquired banks did equally well in this category.

CONCLUSION

Generally, the performance characteristics of the banks acquired by registered bank holding companies during 1965-1970 were found to differ very little from the group of nonacquired banks of similar size and location. The asset structure of the two bank groups were found to be nearly identical, while the loan portfolios of the acquired and nonacquired banks differed negligibly.

One feature that differentiated the performance of the acquired banks from nonacquired banks is earnings. The total operating income/total assets ratio was significantly greater (statistically) for the

¹⁰ Instalment loans were found to have the highest average gross yield of any item in the bank portfolios. *Ibid.* p. 7.

ECONOMIC REVIEW

TABLE IV

Operating Ratios of 30 Acquired and 30 Nonacquired Banks
Fourth Federal Reserve District
Year Prior to Acquisition

	Acquired Banks	Nonacquired Banks	Difference Between Means
	Mean	Mean	
<u>Earnings</u>			
Total operating income/ total assets*	5.50% (0.75)	5.28% (0.62)	0.22% (0.48)
Earnings on loans/gross loan†	6.54% (0.84)	6.31% (0.71)	0.23% (0.64)
Service charges on IPC demand deposits/total IPC demand deposits	0.91% (0.45)	0.88% (0.58)	0.03% (0.44)
Interest on U. S. Government securities/total U. S. Government securities	5.28% (1.76)	4.94% (1.03)	0.34% (1.49)
Interest on other securities/ other securities	3.70% (1.07)	3.66% (0.82)	0.04% (1.23)
<u>Expenses</u>			
Wage and salary expenses/ total assets	1.00% (0.22)	0.95% (0.25)	0.05% (0.25)
Interest on time and savings/ total assets	0.61% (0.91)	0.55% (0.82)	0.06% (0.33)
Other operating expenses/ total assets	0.76% (0.21)	0.71% (0.20)	0.05% (0.25)
Total operating expenses/ total assets†	4.32% (0.79)	4.08% (0.61)	0.24% (0.65)
<u>Profitability</u>			
Net income/total capital	11.46% (4.31)	10.87% (4.09)	0.59% (5.84)
Net income/total assets	0.88% (0.41)	0.87% (0.34)	0.01% (0.56)
Net operating earnings/ total assets	1.18% (0.39)	1.20% (0.37)	-0.02% (0.54)

NOTE: Standard deviations are in parentheses, and the standard errors of the means can be obtained by dividing these figures by \sqrt{N} .

* The average of the differences between the ratios is statistically significant at the 5 percent confidence level.

† The average of the differences between the ratios is statistically significant at the 10 percent confidence level.

Source: Federal Reserve Bank of Cleveland

acquired banks. Although two of the three profitability index were nearly identical for both groups of banks, the net income (after taxes)/total capital ratio was slightly higher for the acquired banks, indicating that the stockholders of the acquired banks obtained a slightly higher return on their investment than the stockholders of the non-acquired banks.

Overall, registered bank holding companies in Ohio have sharply stepped up acquisitions in recent years. The results of the study indicate that

nearly all of the performance characteristics of the acquired banks were similar to other banks in their markets. The acquired banks did have somewhat lower average annual rates of growth of assets and deposits and a significantly lower average annual rate of growth of loans for the five years prior to their acquisition than the nonacquired banks. These lower rates of growth may indicate that the acquired banks were less aggressive in their market area prior to their acquisition than the non-acquired banks.
